

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (currently amended): An integrally cast steel piston for internal engines formed by pouring a cast steel into a sand mold having a cavity having a shape of said integrally cast steel piston, wherein said cast steel has a microstructure containing eutectic carbides forming eutectic colonies which are assemblies of eutectic carbides and a matrix phase.
2. (original): The internal engine piston according to claim 1, whose head portion, pin boss portion and skirt portion are integrally cast.
3. (original): The internal engine piston according to claim 2, wherein it further comprises a cooling hollow portion, which is formed by integral casting.
4. (original): The internal engine piston according to claim 3, wherein it is a diesel engine piston comprising a combustion chamber in a head portion, and wherein it further comprises a cooling hollow portion, which is formed near said combustion chamber by integral casting.
5. (currently amended): An integrally cast steel piston for internal engines formed by pouring a cast steel into a sand mold having a cavity having a shape of said integrally cast steel piston, wherein said cast steel has a microstructure containing eutectic carbides forming eutectic colonies, which are assemblies of eutectic carbides and a matrix phase, said cast steel having a composition comprising, by mass, 0.8% or less of C, 3% or less of Si, 3% or less of Mn, 0.2% or less of S, 3% or less of Ni, 6% or less of Cr, 6% or less of Cu, and 0.01-3% of Nb, the balance being substantially Fe and inevitable impurities.

6. (original): The internal engine piston according to claim 5, wherein said cast steel has a composition comprising, by mass, 0.1-0.55% of C, 0.2-2% of Si, 0.3-3% of Mn, more than 0.005% and 0.2% or less of S, 1% or less of Ni, 3% or less of Cr, 1-4% of Cu, and 0.1-3% of Nb, the balance being substantially Fe and inevitable impurities.

7. (currently amended): An integrally cast steel piston for internal engines formed by pouring a cast steel into a sand mold having a cavity having a shape of said integrally cast steel piston, wherein said cast steel has a microstructure containing eutectic carbides forming eutectic colonies, which are assemblies of eutectic carbides and a matrix phase, said cast steel having a composition comprising, by mass, 0.1-0.8% of C, 3% or less of Si, 3% or less of Mn, 0.2% or less of S, 10% or less of Ni, 30% or less of Cr, 6% or less of Cu, and 0.05-8% of Nb, the balance being substantially Fe and inevitable impurities.

8. (original): The internal engine piston according to claim 7, wherein said cast steel has a composition comprising, by mass, 0.1-0.55% of C, 0.2-2% of Si, 0.3-3% of Mn, 0.05-0.2% of S, 0.5-6% of Ni, 6-20% of Cr, 1-4% of Cu, and 0.2-5% of Nb, the balance being substantially Fe and inevitable impurities.

9. (previously presented): The internal engine piston according to claim 7, wherein said cast steel comprises C, Ni and Nb in a range of $0.05 < (C\% + 0.15 \text{ Ni}\% - 0.12 \text{ Nb}\%) \leq 0.8$ by mass.

10. (previously presented): The internal engine piston according to claim 7, wherein said cast steel has a matrix microstructure, less than 30% of which is an austenite phase.

11. (previously presented): The internal engine piston according to claim 5, wherein said cast steel further comprises 0.5% by mass or less of V and/or Ti.

12. (previously presented): The internal engine piston according to claim 5, wherein said cast steel further comprises at least one of Al, Mg and Ca in an amount of 0.04% by mass or less.

13. (currently amended): An integrally cast steel piston for internal engines formed by pouring a cast steel into a sand mold having a cavity having a shape of said integrally cast steel piston, said cast steel having a microstructure having eutectic carbides at an area ratio of 1-35%, said eutectic carbides forming eutectic colonies, which are assemblies of eutectic carbides and said matrix phase.

14. (original): The internal engine piston according to claim 13, wherein said eutectic carbides have an average equivalent-circle diameter of 3 μm or less.

15. (previously presented): The internal engine piston according to claim 13, wherein the number of eutectic colonies each having an area of 50 μm^2 or more is 10 or more in a 1-mm²-cross section of the microstructure.

16. (previously presented): The internal engine piston according to claim 13, wherein said eutectic carbides include Nb carbides.

17. (currently amended): An integrally cast steel piston for internal engines formed by pouring a cast steel into a sand mold having a cavity having a shape of said integrally cast steel piston, wherein said cast steel has a microstructure containing eutectic carbides forming eutectic colonies, which are assemblies of eutectic carbides and a matrix phase, wherein an area ratio of sulfides is 0.2-3.0% in a cast steel microstructure, and wherein a ratio of the number of sulfides each having a circularity of 0.7 or more to the total number of sulfides is 70% or more.

18. (original): The internal engine piston according to claim 17, wherein said sulfide contains Mn and/or Cr.

19. (previously presented): The internal engine piston according to claim 5, wherein said cast steel has a 0.2-% yield strength of 350 MPa or more and a Young's modulus of 140 GPa or more in a range of 350°C to 500°C, and an average linear thermal expansion coefficient of $10\text{-}16 \times 10^{-6}/^{\circ}\text{C}$ between room temperature and 500°C.

20. (currently amended): A method for producing an integrally cast steel piston for internal engines formed by pouring a cast steel into a sand mold having a cavity having a shape of said integrally cast steel piston, wherein said cast steel has a microstructure containing eutectic carbides forming eutectic colonies, which are assemblies of eutectic carbides and a matrix phase, said cast steel having a composition comprising, by mass, 0.8% or less of C, 3% or less of Si, 3% or less of Mn, 0.2% or less of S, 3% or less of Ni, 6% or less of Cr, 6% or less of Cu, and 0.01-3% of Nb, the balance being substantially Fe and inevitable impurities, said method comprising casting said steel, holding it at 850°C or higher, and then air-cooling it.

21. (currently amended): A method for producing an integrally cast steel piston for internal engines formed by pouring a cast steel into a sand mold having a cavity having a shape of said integrally cast steel piston, wherein said cast steel has a microstructure containing eutectic carbides forming eutectic colonies, which are assemblies of eutectic carbides and a matrix phase, said cast steel having a composition comprising, by mass, 0.1-0.8% of C, 3% or less of Si, 3% or less of Mn, 0.2% or less of S, 10% or less of Ni, 30% or less of Cr, 6% or less of Cu, and 0.05-8% of Nb, the balance being substantially Fe and inevitable impurities, wherein said cast steel is cast, held at 450°C or higher, and then air-cooled.

22. (original): The method for producing an internal engine piston according to claim 21, wherein said cast steel is held at 1000°C or higher after casting, rapidly cooled, held at 450°C or higher, and then air-cooled.